PAYNOW QR SPECIFICATIONS

Version 1.7

abs
The Association of Banks
in Singapore

Date	Version	Description
16 Apr 2018	1.1	PayNow QR Specifications circulated to PayNow members
24 May 2018	1.2	▪ Removed "Transaction Reference" from PayNow payload ▪ As per SGQR specs, added new section on Tag 62 for usage of ID 01 – Bill Number which will replace "Transaction Reference" ▪ Updated sample payload
26 Jun 2018	1.3	▪ Updated Tag 62 ID 01
05 Jul 2018	1.4	▪ Updated the scenarios to cover scenarios where '***' is to be provided
12 Jul 2018	1.5	▪ Added section 5. PayNow QR Design and updated the scenarios ▪ Updated section 3.2
13 Jul 2018	1.51	▪ Updated section 3.5 to update CRC and added new examples ▪ Updated section 5.3 to include additional printing details
20 Jan 2019	1.6	▪ Updated section 2.2 to include 05 Merchant Reference Number and changed to new format ▪ Updated section 2.3 to include scanning logic as agreed on 10-Oct-18 SGQR Technical Workgroup meeting ▪ Updated section 3.2, 3.5 and 4.1 to align to changes to section 2.3 ▪ Updated section 3.5 to include new sample payload ▪ Updated sample PayNow QR to remove ABS logo
01 Feb 2019	1.7	▪ Updated section 2.2 to change Expiry format from YYYYMMDD to YYYYMMDDHHMMSS ▪ Updated section 3.5 to remove earlier edit on CRC

1   INTRODUCTION

This document defines the specifications for PayNow QR. It is based on the SGQR Specifications version 1.6 following EMV QR Code Specifications for Payment Systems. It is expected that PayNow QR be launched along with PayNow Corporate in Q3 2018. This will allow for a seamless customer experience when making payments to a merchant or business.

The PayNow payload will be included in the SGQR framework when ready.

1.1   Alike the SGQR specifications, the PayNow QR specification are largely conformed to the following references:

    1.1.1   Ref [A] - EMV QR Code Specifications for Payment Systems ("EMV QRCPS") – Merchant-Presented Mode. Version 1.0, July 2017

    1.1.2   Ref [B] - ISO 18245. Retail financial services – Merchant category codes

    1.1.3   Ref [C] - ISO 4217. Codes for the representation of currencies and funds

    1.1.4   Ref [D] - ISO 3166-1 alpha 2. Codes for the representation of names of countries and their subdivisions—Part 1: Country codes, using two-letter country codes

    1.1.5   Ref [E] – AID consists of an RIF registered with ISO and optionally a PIX as defined by ISO 7816-4.

    1.1.6   Ref [F] – UUID as defined in the Internet Engineering Task Force (IETF) RFC 4122: https://tools.ietf.org/html/rfc4122

1.2   Abbreviations and Terminology

Abbreviations	Description
ANS	Alphanumeric Special
B2B	Business-to-Business
C2B	Customer-to-Business
CRC	Cyclic Redundancy Check
P2P	Person-to-Person
QR Code	Quick Response Code
SGQR Centralised Repository or "Repository"	The Repository will be the national issuer/database/repository for SGQR, overseen by the SGQR Governing Committee. It will be the central point for acquirers, members and issuers engagement.
SGQR Governing Committee	This Committee will oversee the maintenance, update, specifications and governance of the SGQR.
UUID	Universally Unique Identifier

2 PAYNOW PAYLOAD

2.1 ID '26' will be used for generation of PayNow QR only. For SGQR generation, SGQR CR will assign the ID, which can range from ID 26 – 51.

2.2 To ensure compatibility with SGQR, it is recommended for the QR scanning app be able to identify PayNow payload even if ID '26' is not used (SGQR adopts a floating ID methodology).

Name	ID	Format	Length	Presence	Comment
Merchant Account Information	-	N	"02"	M	*Example: "2694"* Floating ID "26". This ID is allocated for this QR only
Globally Unique Identifier	"00"	N	"09"	M	*Example: "0009SG.PAYNOW"* Reverse Domain Name: SG.PAYNOW
Proxy type	"01"	N	"01"	M	*Example: "01010"* 0 - Mobile number (for P2P); 1 (Not used); 2 – UEN
Proxy Value	"02"	ans	Var up to "16"	M	*Example: "0216+621234567890123"* If proxy type is 0, mobile number is <International Dialling Code preceding with '+'> plus <up to 15-digit Mobile Number>
Editable Transaction amount indicator	"03"	N	"01"	O	*Example: "03010"* "0" – amount cannot be edited "1" – amount can be edited; To be '1' if no amount is provided. If amount is provided, can be either '0' or '1'.

Name	ID	Format	Length	Presence	Comment
QR Expiry Date & Time	"04"	N	"8" or "14"	O	Example: "040820201231" or "041420201231235959" YYYYMMDD: 20201231 or YYYYMMDDHHMMSS: 20201231235959 If QR Expiry Date & Time is not provided, no validation required Else If (QR Expiry Date & Time length is 8) AND (transaction date > QR Expiry Date & Time), transaction should not be processed Else If (QR Expiry Date & Time length is 14) AND (transaction date & time > QR Expiry Date & Time), transaction should not be processed
Merchant Reference Number (For static QR generation)	"05"	ans	Var up to "25"	O	*Example :* *"0525123456789012345678901 2345"* Merchant Reference Number : 1234567890123456789012345 Reference used for merchant reconciliation for static QR. Tag 62 ID 01 to be used for dynamic QR

2.3   QR Scanning Logic for "Transaction Reference" / End to End ID :

S/N	Tag 62 ID 01	PayNow 05 Merchant Reference Number	Scanning / Mobile Logic
1	Provided	Not Provided	Tag 62 ID 01
2	Not Provided or "***"	Provided	PayNow 05 Merchant Reference Number
3	Provided	Provided	Tag 62 ID 01
4	Not Provided or "***"	Not Provided	Customer to provide

3   DATA OBJECTS FOR PAYMENT OR MERCHANT USE IN SINGAPORE

3.1   ID '51' Merchant SGQR ID is not required for PayNow QR. Configuration / values for all other data objects remain the same as SGQR Specs v1.7.

<table>
<tr><th colspan="6">Table 3-1<i>:</i> DETAILS OF SGQR DATA OBJECTS</th></tr>
<tr><th>Name</th><th>ID</th><th>Format</th><th>Length</th><th>Presence</th><th>Comment</th></tr>
<tr><td>Payload Format Indicator</td><td>"00"</td><td>N</td><td>"02"</td><td>M</td><td>i.   Refer to Ref [A]</td></tr>
<tr><td>Point of Initiation Method</td><td>"01"</td><td>N</td><td>"02"</td><td>O</td><td>i.   Refer to Ref [A]</td></tr>
<tr><td>Merchant Account Information</td><td>"02"-"25"</td><td>ans</td><td>Var up to "99"</td><td>M</td><td>i.   Refer to Ref [A]
ii. For EMV schemes.
iii. To include for the Merchant Account Information of a Payment System.</td></tr>
<tr><td>Merchant Account Information</td><td>"26" – "50"</td><td>ans</td><td>Var up to "99",</td><td>M</td><td>i.   Refer to Ref [A]
ii. For Payment Systems accepted by merchants in Singapore and registered with the SGQR Centralised Repository.
iii. To include for the Merchant Account Information of a Payment System.
iv. The 1st Merchant Account Information included will take ID "26", with subsequent merchant account information (i.e. subsequent accepted scheme) to be added sequentially (e.g. ID "27" and so forth).</td></tr>
<tr><td>SGQR Identity Information ("SGQR ID")</td><td>"51"</td><td>ans</td><td>Var up to "99"</td><td>M</td><td>Not applicable for PayNow QR</td></tr>
<tr><td>Merchant Category Code</td><td>"52"</td><td>N</td><td>"04"</td><td>M</td><td>i.   Refer to Ref [B]
ii. If this is not utilised by a payment scheme, "0000" is to be added in.
iii. When a payment system needs the data, it will fill or replace with a valid MCC, according to Ref [B].</td></tr>
<tr><td>Transaction Currency</td><td>"53"</td><td>N</td><td>"03"</td><td>M</td><td>i.   Refer to Ref [C].</td></tr>
</table>

Table 3-1: DETAILS OF SGQR DATA OBJECTS					
Name	**ID**	**Format**	**Length**	**Presence**	**Comment**
					ii. If it is not populated and a payment system does not need it, it will be filled with a default "702" (which is SGD). iii. When a payment service needs the data other than the default, it will fill or replace with a valid Currency Code, according to Ref [C].
Transaction Amount	"54"	ans	var. up to "13"	C	i. Absent if the mobile application is to prompt the consumer to enter the transaction amount. Present otherwise.
Tip or Convenience Indicator	"55"	N	"02"	O	Not applicable
Value of Convenience Fee Fixed	"56"	ans	var. up to "13"	C	i. Presence of these data objects depends on the presence and value of the ID"55" - Tip or Convenience Indicator.
Value of Convenience Fee Percentage	"57"	ans	var. up to "05"	C	
Country Code	"58"	ans	"02"	M	i. It will be filled with a default "SG". Refer to Ref [D].
Merchant Name	"59"	ans	Var. up to "25"	M	i. This is the trade name/store name/ "doing-business-as" name. ii. Default to "NA" if not applicable
Merchant City	'60"	ans	var. up to "15"	M	i. It will be filled with default "Singapore".
Postal Code	"61"	ans	"06", var up to "10"	O	i. If this is relevant to the payment system, postal code where the QR is deployed, will be added.
Additional Data Field Template	"62"	S	Var. up to "99"	O	i. ID 01 – Bill Number to be used to reflect transaction reference ii. This includes information that may be provided by the

<table>
<tr><th colspan="6">Table 3-1: DETAILS OF SGQR DATA OBJECTS</th></tr>
<tr><th>Name</th><th>ID</th><th>Format</th><th>Length</th><th>Presence</th><th>Comment</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>Merchant or may be populated by the mobile application to enable or facilitate certain use cases.
iii. For the list of data objects that can be included in this template, please refer to Table 3.7 of Ref [A].</td></tr>
<tr><td>Merchant Information—Language Template</td><td>"64"</td><td>S</td><td>var. up to "99"</td><td>O</td><td>i. This includes merchant information in an alternate language and may use a character set different from the Common Character Set. It provides an alternative to the merchant information under the root.
ii. For the list of data objects that can be included in this template, please refer to Table 3.8 of Ref [A].</td></tr>
<tr><td>RFU for EMVCo</td><td>"65"-"79"</td><td>S</td><td>var. up to "99"</td><td>O</td><td>i. Data objects for EMVCo.</td></tr>
<tr><td>Unreserved templates</td><td>"80"-"99"</td><td>S</td><td>var. up to "99"</td><td>O</td><td>i. Unreserved templates.
ii. Use is subject to consent of SGQR Governing Committee.</td></tr>
<tr><td>CRC</td><td>"63"</td><td>ans</td><td>"04"</td><td>M</td><td>i. Checksum calculated over all the data objects included in the QR Code and will be the last object under the root and allows the mobile application to check the integrity of the data scanned without having to parse all of the data objects.
ii. Refer to 4.7.3 of Ref [A].</td></tr>
</table>

3.2   Sample - Tag 62 - Additional Data Field Template ("Transaction Reference"). Not required to generate with tag 62 if no bill number is entered at point of generation. (Note that Tag 62 is not maintained in SGQR CR)

Data Object	Input Characters	Remarks
Tag 62	"6229"	

Name	ID	Format	Length	Input Characters

Bill Number	"01"	ans	var. up to "25"	"0125012345678901234 5678901234" or "***". The presence of "***" indicates that the mobile application is responsible for obtaining the necessary information from the consumer or user.
Mobile Number	"02"	ans	var. up to "25"	Not in use for PayNow
Store Label	"03"	ans	var. up to "25"	Not in use for PayNow
Loyalty Number	"04"	ans	var. up to "25"	Not in use for PayNow
Reference Label	"05"	ans	var. up to "25"	Not in use for PayNow
Customer Label	"06"	ans	var. up to "25"	Not in use for PayNow
Terminal Label	"07"	ans	var. up to "25"	Not in use for PayNow
Purpose of Transaction	"08"	ans	var. up to "25"	Not in use for PayNow
Additional Consumer Data Request	"09"	ans	var. up to "03"	Not in use for PayNow
RFU for EMVCo	"10" – "49"	S		Not in use for PayNow
Payment System specific templates	"50" – "99"	S		Not in use for PayNow

3.3 Sample - QR Code Conventions

Data Object	Input Characters	Remarks
Payload Format Indicator	"000201"	Version 01 (Default)
Point of Initiation Method	"010211"	"11" for Static QR Code

3.4 Sample - Additional Merchant Information

Data Object	Input Characters	Remarks
MCC (ID "52")	"52045814"	"5814" for Hawker Centre
Transaction Currency (ID "53")	"5303702"	"702" for Singapore Dollar
Country Code (ID "58")	"5802SG"	
Merchant Name (ID "59")	"5916FOOD XYZ PTE LTD"	Food XYZ Pte Ltd
Merchant City (ID "60")	"6009SINGAPORE"	Singapore

Postal Code (ID"61")	"6106081006"	081006

3.5 Sample Representation

In ASCII format – Example 1 (Tag 62 ID 01 is provided)

"00020101021126550009SG.PAYNOW010100216+6212345678901230301004082020123152045
81453037025802SG5916FOOD XYZ PTE
LTD6009SINGAPORE610608100662290125012345678901234567890123463 04B90C"

In ASCII format – Example 2 (Transaction reference is not entered)

"00020101021126550009SG.PAYNOW010100216+6212345678901230301004082020123152045
81453037025802SG5916FOOD XYZ PTE LTD6009SINGAPORE61060810066304D7A0"

In ASCII format – Example 3 (Tag 62 ID 01 is entered as '***')

"00020101021126550009SG.PAYNOW010100216+6212345678901230301004082020123152045
81453037025802SG5916FOOD XYZ PTE
LTD6009SINGAPORE61060810066 2070103***6304D165"

In ASCII format – Example 4 (PayNow payload 05 Merchant Reference Number is provided)

"00020101021126550009SG.PAYNOW010100216+6212345678901230301004082020123105251
23456789012345678901234552045814530370258 02SG5916FOOD XYZ PTE
LTD6009SINGAPORE61060810066304A96F"

4   Appendix

4.1   Illustration of potential use cases and its handling by the Scan & Pay App

Generated QR Code				
	Scenario 1	**Scenario 2**	**Scenario 3**	**Scenario 3**
Proxy Type / Value	Mobile	Mobile	Mobile	Mobile
Transaction Reference	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Amount	<Not Provided>	Provided	<Not Provided>	Provided
QR Expiry Date	<Not Provided>	Provided	Provided	<Not Provided>

Expected Handling by QR Code Scan & Pay App				
Customer to Input	*Amount* (Editable txn amount indicator should be '1')	*Amount* (Only if Editable txn amount indicator = '1'; If indicator = '0', payer should not be able to edit amount)	*Amount* (Editable txn amount indicator should be '1')	*Amount* (Only if Editable txn amount indicator = '1'; If indicator = '0', payer should not be able to edit amount)
System Validation	No *QR expiry date* validation required if no date is provided	To validate that *QR expiry date* >= transaction date	To validate that *QR expiry date* >= transaction date	No *QR expiry date* validation required

Generated QR Code				
	Scenario 5	**Scenario 6**	**Scenario 7**	**Scenario 8**
Proxy Type / Value	UEN	UEN	UEN	UEN
Transaction Reference (Scanning logic per section 2.3)	Provided	Not Provided	Provided	Not Provided
Amount	<Not Provided>	Provided	Provided	<Not Provided>
QR Expiry Date	<Not Provided>	Provided	<Not Provided>	Provided

Expected Handling by QR Code Scan & Pay App				
Customer to Input	*Amount* (Editable txn amount indicator should be '1')	*Amount* (Only if Editable txn amount indicator = '1'; Else If indicator = '0', payer should not be able to edit amount) *Transaction Reference* (Mandatory for payer to provide for UEN)	*Amount* (Only if Editable txn amount indicator = '1'; Else If indicator = '0', payer should not be able to edit amount)	*Amount* (Editable txn amount indicator should be '1') *Transaction Reference* (Mandatory for payer to provide for UEN)
System Validation	No *QR expiry date* validation required *Transaction Reference* cannot be edited	To validate that *QR expiry date* >= transaction date	No *QR expiry date* validation *Transaction Reference* cannot be edited	To validate that *QR expiry date* >= transaction date

5   PayNow QR Design

5.1   QR generated by mobile app or online

- a. The QR colour :
    - i.   PANTONE 2405 C, CMYK 52 / 100 / 4 / 0
    - ii.   RGB 124 / 26 / 120
    - iii. HSB 259 / 9 / 12
    - iv.   HEX #7C1A78
- b. Body can be either with dots or the generic QR squares.
- c. Logo of PayNow to be 30% of entire QR.
- d. Actual size of PayNow QR can vary as long as it is square and scanable
- e. The shape of the corners of the QR in squares.
- f. See design template below and attached for your reference. The PayNow logo with white background is also attached.

5.2   QR generated on Biller statements / advices

a. The QR colour can be either black and white or per colour codes below
    i. PANTONE 2405 C, CMYK 52 / 100 / 4 / 0
    ii. RGB 124 / 26 / 120
    iii. HSB 259 / 9 / 12
    iv. HEX #7C1A78
g. Body can be either with dots or the generic QR squares.
h. Logo of PayNow to be 30% of entire QR.
i. Actual size of PayNow QR can vary as long as it is square and scanable
j. The shape of the corners of the QR in squares.
k. Please refer to section 5.1 for PayNow QR design and logo

5.3   QR generated on stickers

l.   The QR colour :
    i. PANTONE 2405 C, CMYK 52 / 100 / 4 / 0
    ii. RGB 124 / 26 / 120
    iii. HSB 259 / 9 / 12
    iv. HEX #7C1A78
m. Body can be either with dots or the generic QR squares.
n. Logo of PayNow to be 30% of entire QR.
o. Actual size of PayNow QR to be 9cm x 9cm
p. The shape of the corners of the QR in squares.
q. See design template below and attached for your reference. The PayNow logo with white background is also attached.
r. Other additional details :
    i. A5
    ii. Vinyl
    iii. Matt
    iv. Water resistant
    v. High Def (e.g. 300 dpi)

3.4cm

3.64cm

9cm

2.9cm

2.9cm

9cm 2.2cm

0.5cm

SCAN TO PAY

9cm

1cm

1.1cm

Arial,
10.5,
Bold

PayNow is supported by these Participating Banks

Arial,
10.5

Bank of China , Citibank , DBS/POSB , HSBC Bank ,
Industrial and Commercial Bank of China Limited ,
Maybank , OCBC Bank , Standard Chartered Bank &
United Overseas Bank Limited

2.6cm